

FAIRCHILD

DU MONT LABORATORIES

DIVISIONS OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION
750 BLOOMFIELD AVENUE, CLIFTON, NEW JERSEY

Electronic Tube Division

Sheet 1 of 7

Cathode-Ray Tube
Type KC2296P-

TENTATIVE

The Du Mont Type KC2296P- is a 7-inch diagonal, square face, five beam, electrostatic deflection and focus cathode-ray tube. Each beam is independently controllable, and is positioned to scan a separate screen area, except for "B" and "C" which coincide. The scanning of units "B" and "C" are rotated 90° with respect to the other units. The deflection electrode and acceleration electrode connections are brought out through the bulb wall to minimize lead inductance and capacity, and to improve insulation. A collar or ring base provides ease of connection to these leads.

A rear view optical window allows photography of the display from behind the tube face while the operator continuously views the display in the normal manner. The tube has a black internal graticule.

GENERAL CHARACTERISTICS¹

Electrical Data

Focusing Method
Deflecting Method

Electrostatic
Electrostatic

Direct Interelectrode Capacitances, Approximate

Cathode to all	5.0	μf
Grid No. 1 to all	5.5	μf
D1 to D2	2.0	μf
D3 to D4	2.4	μf
D1 to all	6.8	μf
D2 to all	6.8	μf
D3 to all	6.5	μf
D4 to all	6.5	μf

Optical Data

Phosphor Number	1	2	4	7	11
Fluorescence	Yellow-Green	Yellow-Green	White	White	Blue
Phosphorescence	-----	Green	-----	Yellow-Green	----
Persistence	Medium	Medium	Medium to Medium Short	Long Short	Medium- Short

Mechanical Data

Overall Length	18 1/2	+0 -3/8	Inches
Greatest Bulb Diagonal	7 1/32		Inches
Minimum Useful Screen Width ²	4.5		Inches
Bulb Contact	J1-22		

DE-6892
10/22/63

Cathode-Ray Tube
Type KC2296P-TENTATIVEGENERAL CHARACTERISTICS (Mechanical Data) (Continued)Collar, 22-Pin
Base, 25-Pin
BasingSpecial
B25-139

Collar and Base Alignment:

Collar Pin No. 1 and base key each aligns with the D3D4 trace of guns "B" and "C"	± 10	Degrees
Collar Pin No. 1 and base key each aligns with the D1D2 trace of guns "A", "D" and "E"	± 10	Degrees
Collar Pin No. 1 and base key each aligns with the bulb sidewall	± 5	Degrees
Collar Pin No. 1 aligns with base key within	3	Degrees

Positive voltage on D3 of guns "B" and "C" deflects the beam toward Pin No. 1 of the ring base
 Positive voltage on D1 of guns "B" and "C" deflects the beam approximately toward Pin No. 6 of the ring base

Positive voltage on D3 of guns "A", "D" and "E" deflects the beam approximately toward Pin No. 6 of the ring base

Positive voltage on D1 of guns "A", "D" and "E" deflects the beam toward Pin No. 12 of the ring base

Bulb Contact Alignment:

Bulb cap aligns with D3D4 trace of guns "B" and "C"	± 10	Degrees
Bulb cap diametrically opposite base key and Collar Pin No. 1		
Bulb cap located on tube center line	$\pm 1/4$	Inch
Bulb wall aligns with D1D2 trace of guns "A", "D" and "E"	± 5	Degrees
Bulb wall aligns with D3D4 trace of guns "B" and "C"	± 5	Degrees

Trace Alignment:

D1D2 trace aligns with D3D4 trace	90 ± 2	Degrees
Corresponding traces align within ³	2	Degrees

MAXIMUM RATINGS (Design Center Values)

Heater Voltage	6.3	Volts
Heater Current at 6.3 Volts (for each unit)	$0.6 \pm 10\%$	Ampere

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Cathode-Ray Tube
Type KC2296P-TENTATIVEMAXIMUM RATINGS (Design Center Values) (Continued)

Post Accelerator Voltage	7000	Max. Volts DC
Accelerator Voltage	3500	Max. Volts DC
Accelerator Input	6	Max. Watts
Ratio Post Accelerator Voltage to Accelerator Voltage ⁴	2.0	Max.
Focusing Voltage	1500	Max. Volts DC
Grid No. 1 Voltage		
Negative Bias Value	200	Max. Volts DC
Positive Bias Value	0	Max. Volts DC
Positive Peak Value	0	Max. Volts
Peak Heater-Cathode Voltage		
Heater negative with respect to cathode	180	Max. Volts
Heater positive with respect to cathode	180	Max. Volts
Peak Voltage between Accelerator and any Deflection Electrode	500	Volts

TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage	4000	Volts DC
Accelerator Voltage	2000	Volts DC
Focusing Voltage	450 to 650	Volts DC
Grid No. 1 Voltage ⁵	-30 to -50	Volts DC
Modulation ⁶	45	Max. Volts DC
Line Width "A" ⁷	.025	Max. Inch
Deflection Factors:		
D1D2 - guns "B" and "C"	65 to 85	Volts DC/Inch
D1D2 - guns "A", "D" and "E"	60 to 80	Volts DC/Inch
D3D4 - guns "B" and "C"	30 to 40	Volts DC/Inch
D3D4 - guns "A", "D" and "E"	35 to 45	Volts DC/Inch
Deflection Factor Uniformity ⁸	2%	Max.
Useful Scan ⁹		
D1D2 - guns "B" and "C"; D3D4 - guns "A", "D" and "E"	4.5	Min. Inches
D3D4 - guns "B" and "C"; D1D2 - guns "A", "D" and "E"	1.5	Min. Inches
Interaction Factor ¹⁰	.00001	Max. Inch/Volt

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Cathode-Ray Tube
Type KC2296P-TENTATIVECIRCUIT DESIGN VALUES

Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Resistance in any Deflecting-Electrode Circuit ¹¹	1.0	Max. Megohms

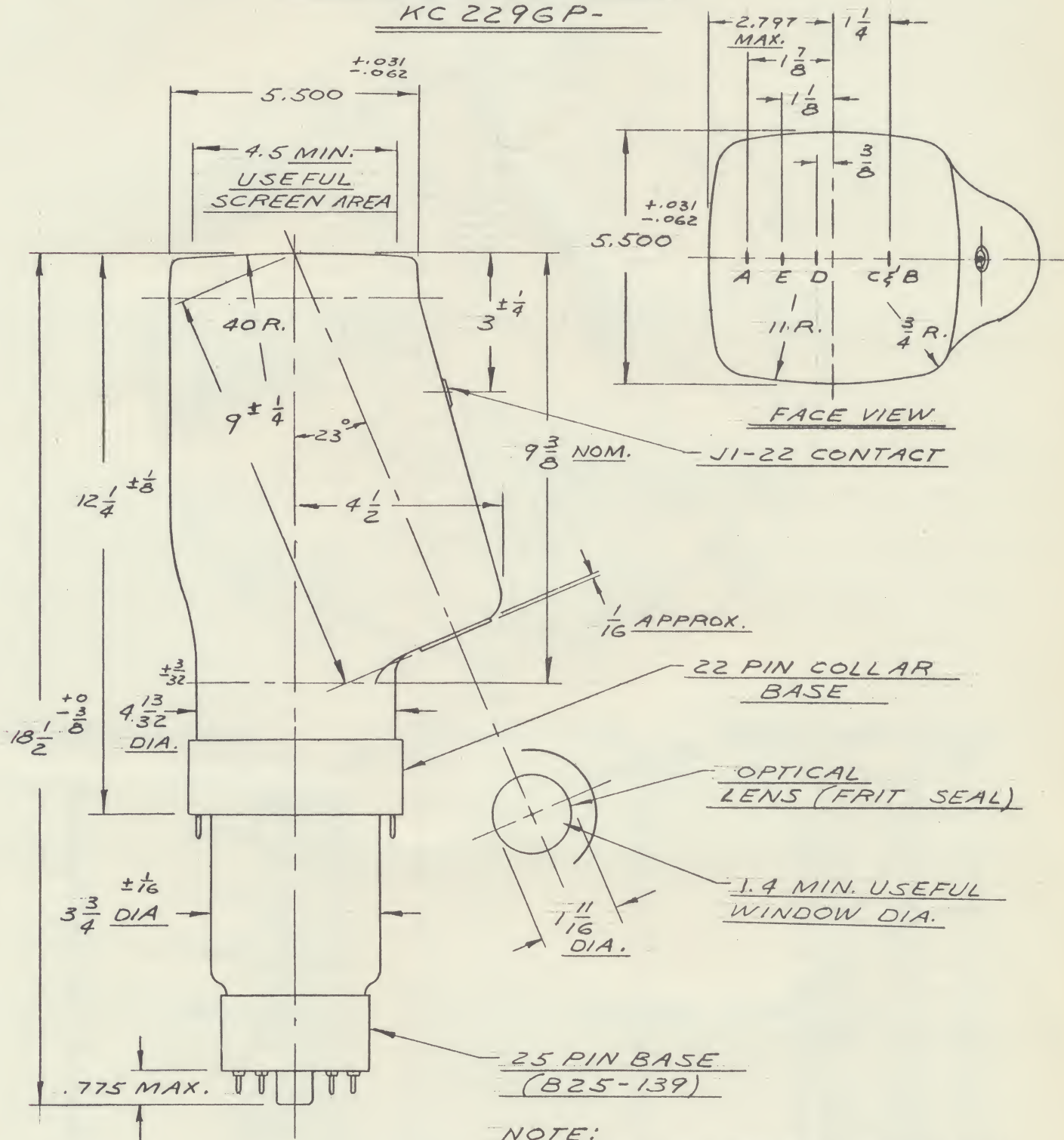
NOTES

1. Values are for each unit unless otherwise stated.
2. Following the bulb contour (except for corners).
3. Corresponding traces are those traces which deflect in the same trace direction.
4. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 2.0. Operation at other ratios of Eb3/Eb2 may result in changes in deflection uniformity and pattern distortion.
5. Visual extinction of the undeflected, focused spot.
6. The increase in Grid No. 1 voltage from cut-off to produce an Ib3 of 50 μ ADC.
7. Measured in accordance with MIL-E-1 specifications, using an Ib3 of 25 μ ADC.
8. Measured in accordance with MIL-E-1 specifications.
9. Centered about normal undeflected spot position.
10. The deflection of one beam when balanced DC voltages are applied to the deflection electrodes of the other will not be greater than the indicated value.
11. It is recommended that the deflecting-electrode circuit resistances be approximately equal. Higher resistance values up to five megohms may be used for low beam current operation.

TENTATIVE

CATHODE-RAY TUBE

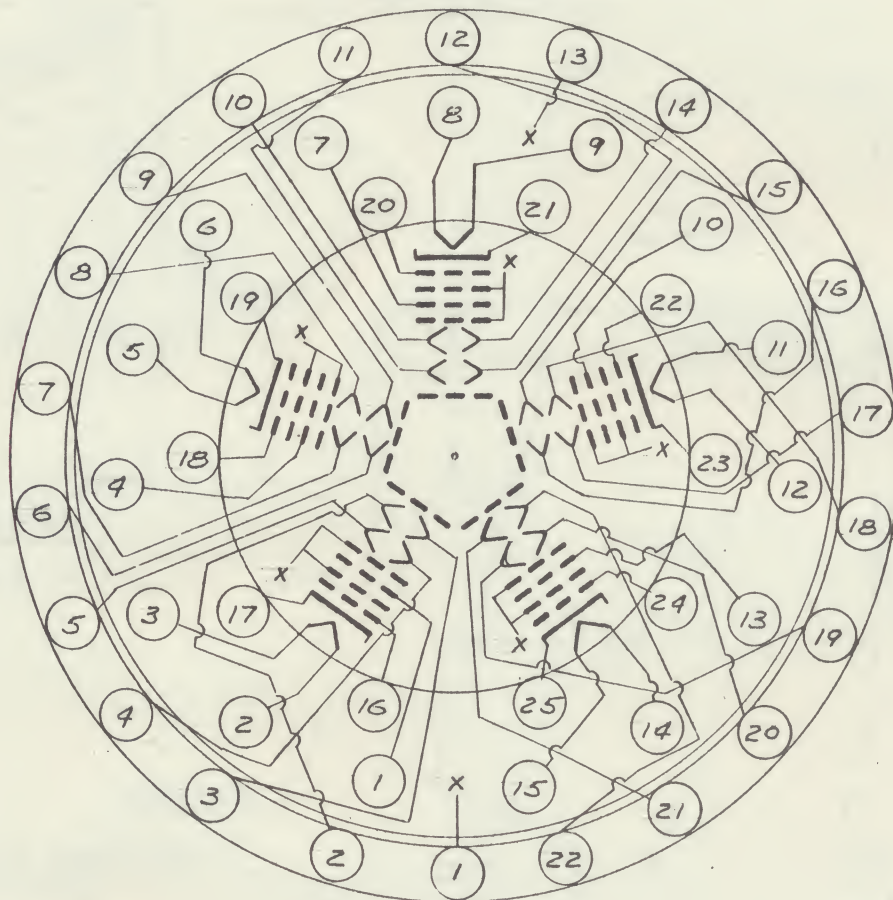
KC 229GP-



NOTE:

BEAMS CENTER ON POSITIONS
INDICATED WITHIN $\frac{5}{16}$ R. CIRCLE

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TENTATIVEBASINGKC 2296P-22 PIN COLLAR BASE

<u>PIN NO.</u>	<u>ELEMENT</u>	<u>BEAM</u>
1	ACCELERATOR	COMMON
2	D.P. NO. 2	A
3	D.P. NO. 1	A
4	D.P. NO. 3	A
5	D.P. NO. 4	A
6	D.P. NO. 1	B
7	D.P. NO. 3	B
8	D.P. NO. 4	B
9	D.P. NO. 2	B
10	D.P. NO. 3	C
11	D.P. NO. 1	C
12	D.P. NO. 2	C
13	ACCELERATOR	COMMON
14	D.P. NO. 4	C
15	D.P. NO. 1	D
16	D.P. NO. 2	D
17	D.P. NO. 4	D
18	D.P. NO. 3	D
19	D.P. NO. 4	E
20	D.P. NO. 3	E
21	D.P. NO. 2	E
22	D.P. NO. 1	E

BOTTOM VIEW25 PIN BASE

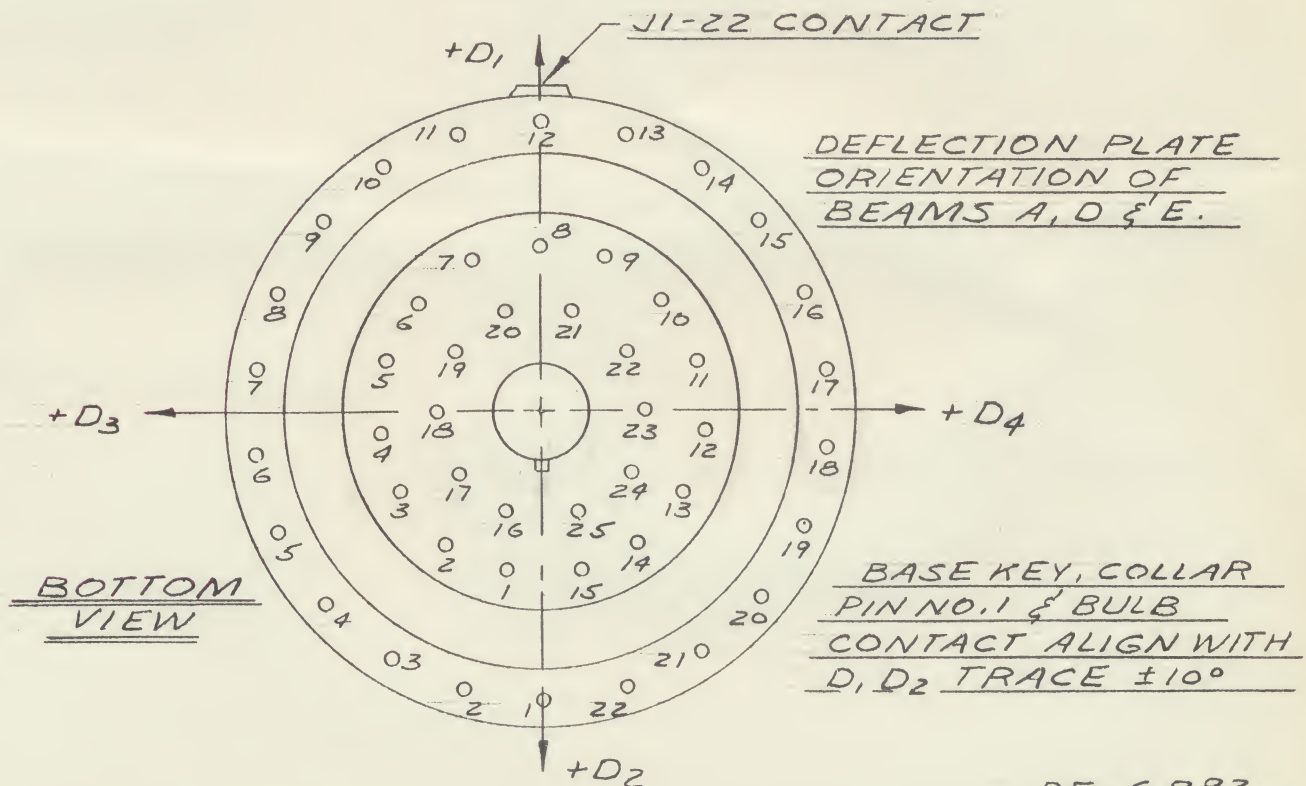
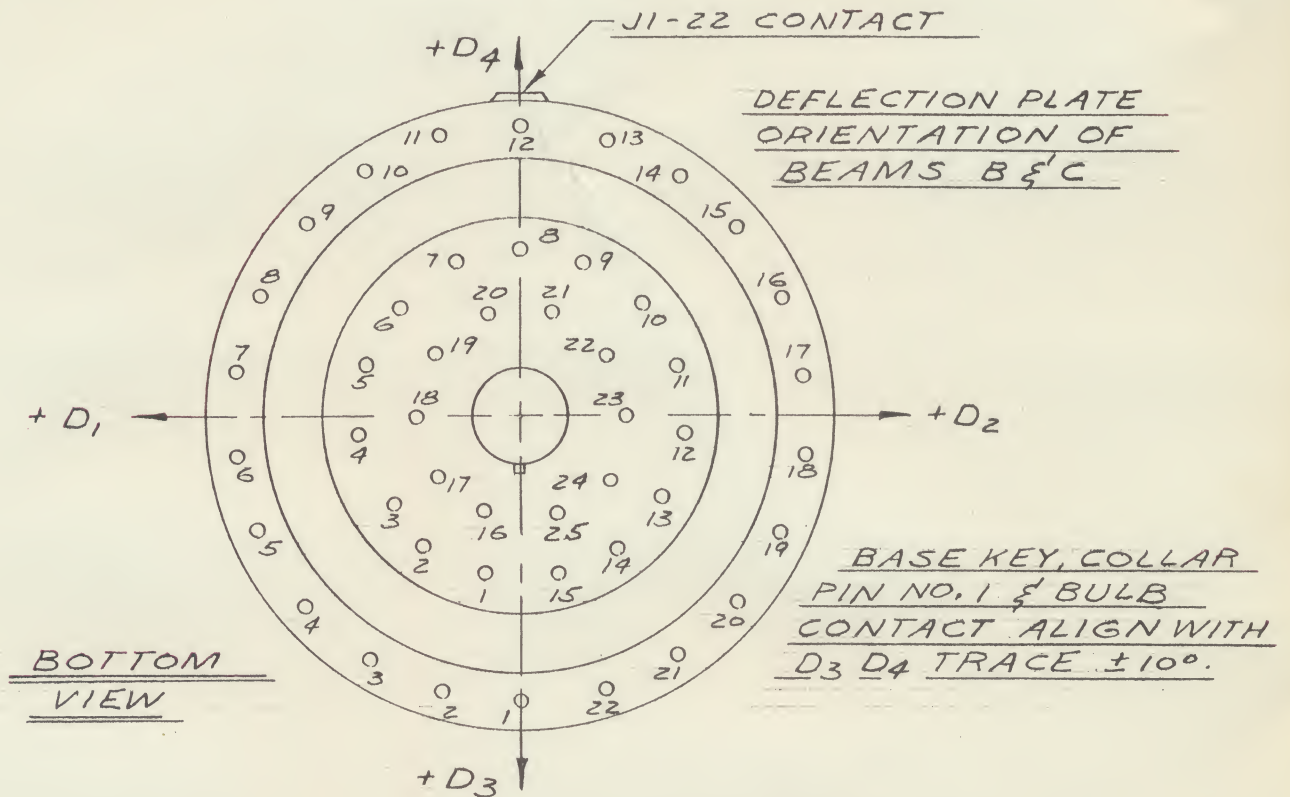
<u>PIN NO.</u>	<u>ELEMENT</u>	<u>BEAM</u>
1	FOCUS. ELECT.	A
2	HEATER	A
3	HEATER	A
4	FOCUS. ELECT.	B
5	HEATER	B
6	HEATER	B
7	FOCUS. ELECT.	C
8	HEATER	C
9	HEATER	C
10	FOCUS. ELECT.	D
11	HEATER	D
12	HEATER	D
13	FOCUS. ELECT.	E
14	HEATER	E
15	HEATER	E
16	GRID NO. 1	A
17	CATHODE	A
18	GRID NO. 1	B
19	CATHODE	B
20	GRID NO. 1	C
21	CATHODE	C
22	GRID NO. 1	D
23	CATHODE	D
24	GRID NO. 1	E
25	CATHODE	E

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TENTATIVE

CATHODE-RAY TUBE

KC2296P-



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